Review Article
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Knee pain among athletes influenced by several factors at Bangladesh

Abstract

Objectives: To expose the injured participant's age, training duration and sporting event, identify other associated knee injuries, extract the types of injury, identify recurrence of injuries among the athlete, and know about the management of injury (medication, physiotherapy or both).

Methods: A quantitative cross-sectional study design was chosen to achieve the objectives of the study. 40 subjects were selected through convenience sampling technique from the athlete, who trained in BKSP by using a structural questionnaire to collect data.

Results: The factors of knee pain 78% (n=29) among the 40 participants. Among the injured participants most affected age was 17, 20.0% (n=8). Male athlete are more affected at the percentage of 77.5% (n=31). 42.5% (n=17) participants are suffered from ACL injury who are trainees of athletics and 41% (n=16) participants are injured whom training event is 2 years. Along with ACL injury 10.0% (n=4) participants are suffered from meniscus injury. 90.0% (n=36) injured participants are affected by direct hit and recurrence rate is 10.0% (n=4). Among 40 affected participants 41% (n=16) participants do their warm up cool down activities for 15 to 20 minutes and most of them about 60.0% (n=24) taken both medicines and physiotherapy treatment.

Conclusion: The vulnerable age range 15-20 was frequent injury occurring among Athlete and noticeably flexibility and overuse are the key issues to cause of injury. Health education and perform regular physical activity along with physio therapeutic exercises can prevent injury.

Keywords: knee pain, athletes, ACL injury, rehabilitation

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Introduction

Knee pain is a common problem for sports, especially because of injuries that happen from overuse. A study showed that these injuries are often caused by things like sudden increases in activity intensity, poor conditioning, bad training methods, and using the wrong tools.[1] One in four players between the ages of 16 and 25 have pain in the front of the knee. This is a big problem for sports medicine.[2] The exact reason of pain in the front of the knee is still unknown, but it may be due to anatomical problems or a misaligned patella when the knee moves.[3] Duarte Junior et al., say that subluxation of the biceps femoris tendon may sometimes cause knee pain.[4] When playing sports that involve quick acceleration, braking, and direction changes, the anterior cruciate ligament (ACL) is often injured. Most ACL injuries are caused by things that don't involve collisions.[5] ACL injuries are often caused by low-speed, non-contact movements, contact injuries that involve rotation, or bending, valgus stress, or hyperextension that happens during impact sports.[6] Female soccer players are more likely than men to hurt their ACL.[7] Patellofemoral pain syndrome is a common disease that causes knee pain in young athletes. Most knee pain is caused by abuse injuries, but Osgood-Schlatter disease, Sinding-Larsen-Johansson syndrome, and osteochondritis dissecans[1] are also possible causes. Patellofemoral osteoarthritis is often accompanied by dynamic valgus and lateral patellar maltracking in older patients.[8] Imaging methods like ultrasonography, which is cheap, doesn't hurt, and is easy to get, can help doctors figure out what's wrong with knee injuries and related conditions.[9] Mendiguchia et al., say that hamstring strains are common in high-speed sports like sprinting[10] and can be put into different groups based on how the injury happens. It is important to know how bad a muscle strain is so that rehabilitation and healing can be planned.[11] Physiotherapy is a key part of avoiding and healing sports injuries, and the number of people who need it has grown as sports have become more popular.[12] Injury is a big problem for athletes around the world and often keeps them from taking part in big games.[13] The purpose of this research To determine the injured participant's age, training duration, and athletic event, other knee injuries, injury types, athlete recurrence, and injury management.

Method

The quantitative methodology used here was a cross-sectional retrospective survey. The study aimed to efficiently collect data, hence a survey was conducted looking backwards. Looking back at what happened and why can help you make smart decisions about the future. Dhaka, Bangladesh's Bangladesh Krira Shikkha Protisthan (BKSP) served as the site for the research. Due to its unique role as a national center for the discovery and development of young men's and women's athletic potential, BKSP was chosen as the location for this research. Those in charge of the institute work for the Ministry of Youth and Sports. BKSP athletes who had sustained injuries throughout the previous calendar year constituted the study population. Although calculations indicate that a sample size of at least 139 persons would have been optimal, time and accessibility constraints led to a convenience sample of 40 athletes being selected instead. Male and female athletes between the ages of 15 and 30 who were members of BKSP and who had sustained a knee injury while participating in sports within the previous year met the inclusion criteria for the study. Participants who met neither the injury nor the unwillingness to participate criterion were ruled out. In-person interviews were conducted in which participants answered a standardized, closed-ended questionnaire. Age, education, training age, health, and previous injuries were just few of the socio-demographic categories

explored in the survey. There was a total of four weeks spent gathering information. Descriptive statistics were used in the analysis of the gathered data using SPSS, version 20.0. A computerized data record file was kept, and the variables were given names. Microsoft Office Excel 2010 was used to make charts, graphs, and tables for data analysis. All ethical considerations were taken into account and the study was conducted in accordance with the recommendations of the Institutional Review Board and the Bangladesh Medical Research Council. Ethical review boards gave their stamp of approval to the study's proposed methodology, and participants were given consent documents. Participants were assured of their privacy and anonymity and made aware of their ability to discontinue participation at any time.

Results

Out of the 40 participants, the minimum age 16 years, maximum age 25 years, the mean of the age is 19.90 and the stander deviation is 2.56. The information given shows how factors fall into different groups. 60% of the people are between the ages of 15 and 20, and 40% are between the ages of 21 and 25. Based on the gender split, 77% are men and 23% are women. Cricket is played by 17.5% of people, football by 32.5%, basketball and hockey by 7.5% each, swimming and tennis by 2.5% each, shooting by 17.5%, and volleyball by 12%. There are different amounts of mental stress: 47% have little stress, 50% have some stress, and 3% have a lot or a lot of stress. In sports, 60% of people don't have too much to do, while 40% have too much to do. When it comes to posture, 7% of people have lordosis, 3% have kyphosis, and 90% have a normal stance. 90% of accidents are caused directly, while 10% are caused indirectly. The severity of injuries is like this: 47% are mild, 43% are middling, and 10% are severe. In 75% of cases, the pain comes back, but in 25% of cases, it doesn't come back. Drugs are used in 2% of cases, physiotherapy is used in 38%, and both drugs and physiotherapy are used in 60% of cases. In 65% of cases, surgery is done, but in 35% of cases, it is not necessary (Table 1).

In Figure 1 knee injuries and percentages are listed. ACL injuries (42.5%) are the most common. Meniscus tears (10%), medial cruciate ligament (2.5%), PCL (posterior cruciate ligament) (5%), subchondral (7.5%), and ligament injuries (27.5%) are other problems. Patellar ligament and tendon injuries are 2.5% each. Age, gender, and sports were examined for the study variables. Twisting in the trunk was associated with gender (p=0.008) and sports (p=0.046), but not age. Sports were marginally associated with injury type (p-value=0.026). Age and gender were not. Sports were connected with injury recurrence (p-value=0.004) but not age or gender. Chi-square and Kruskal Wallis tests determined significance levels, with * indicating significance at $p < 0.05$ and ** at p 0.01(Table 2).

Table 1 Baseline characteristics of participants

Variable	Value	Variable	Value	Variable	Value
Age group		**Mental stress**		**Severity of injury**	
15-20 Year	60%	Little	47%	Mild	47%
21-25 Year	40%	Some extent	50%	Moderate	43%
Gender		Rather much or much	3%	Severe	10%
Male	77%	Overload at sports		Recurrence of injury	
Female	23%	Little	60%	Yes	75%
Sports		Definite	40%	No	25%
Cricket	17.50%	Posture		Treatment	
Football	32.50%	Lordotic	7%	Drugs	2%
Basketball	7.50%	Kyphotic	3%	Physiotherapy	38%
Hockey	7.50%	Normal	90%	Both	60%
Swimming	2.50%	Type of injury		Surgery	
Tennis	2.50%	Indirect	10%	Yes	65%
Shooting	17.50%	Direct	90%	No	35%
Volleyball	12.00%				

Table 2 Association among twisting in trunk, type of injury, recurrence of injury and age, gender, sports

Variable	Age (P-value)	Gender(P-value)	Sports(P-value)
Twisting in trunk	0.182a	0.008b**	0.046b*
Type of injury	0.132a	0.255b	0.026b*
Recurrence of injury	1.000a**	0.826**	0.004b*

a, chi square; b, Kruskal Wallis Test * ≤ 0.05 ,**≤ 0.01, ***≤ 0.011

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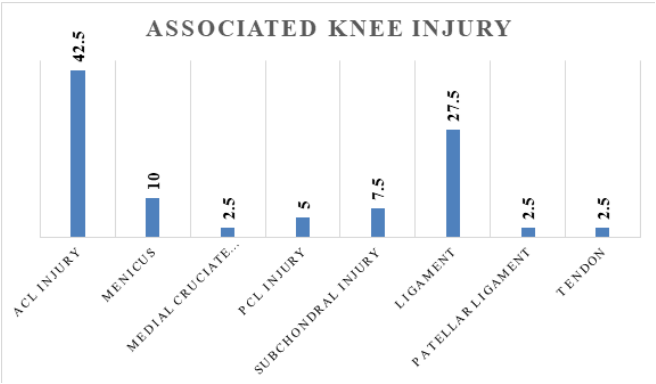

Figure 1 Associated knee injury.

Discussion

In this study found 42.5% of injuries were ACL injuries, while 10.0% were meniscus injuries. Other injuries included medial cruciate ligament (2.5%, n=1), PCL (5%, n=2), subchondral (7.5%), collateral ligament (27.5%,), patellar (2.5%), and tendon (2.5%). Denmark had 3 ACL injuries per 10,000 people, with athletes having a higher rate.[14] Sweden had 43% of all soccer-related knee injuries, and a New Zealand study found 36.9 ACL injuries per 100,000 person-years. The 40 wounded trainees were 77.5% male and 22.5% female. Women have a 2-3 fold higher risk of ACL injuries than men and tend to injure their lower legs.[15] Soccer teams have 1.3% male and 3.75% female ACL injuries. ACL injuries account for 6% of match injuries and 2% of training injuries in women in the US, but less than 1% in men. Football trainees had the most injuries (32.5%), followed by cricket (17.5%), shooting (17.5%), hockey (7.5%), tennis (2.5%), gymnastics (10%), swimming, judo, and volleyball (2.5% each). Football, basketball, professional wrestling, martial arts, artistic gymnastics, and alpine skiing have higher ACL injury rates.[6,15] The nature of the injuries was 90% normal spine curvature, 7.5% lordotic, and 2.5% kyphotic. Meniscus (60-75% prevalence), articular cartilage (46%), subchondral bone (80%), and entire collateral ligament (5-24%) damage are associated with ACL rips. 90% of injured individuals were hit directly during training, while 10% were hit indirectly. Most injuries were moderate (42.5%), followed by severe (10%) and mild (47.5%). 27.5% of participants did 15-minute warm-ups and cool-downs, while 40% did 20-minute ones. Shorter warm-up and cool-down times increase injury risk.[16] 60% received medication and physiotherapy, whereas 37.5% received simple physiotherapy. Most injured athletes receive physiotherapy, but some also need conservative or surgical treatment.[17] This study examines the prevalence, demographics, injury features, and treatment patterns of ACL injuries and concomitant injuries in study participants, with references to pertinent literature.

Conclusion

This study examined knee injuries in athletes by age, training time, sport, concomitant injuries, injury recurrence, and therapeutic strategies. 40 individuals completed a structured questionnaire in a quantitative cross-sectional study. 78% reported knee discomfort. 20% of injured participants were 17. 77.5% of impacted athletes were male. ACL injuries were the most common, involving 42.5% of athletes, and 41% happened during two-year training events. Meniscus injuries affected 10%. Direct impacts caused 90% of injuries, and 10% recurred. 41% of patients did 15–20-minute warm-ups and cool-downs, while 60% received medicine and physiotherapy. This study shows that flexibility and overuse make 15-20-year-old players susceptible to knee injury. Health education, regular physical activity, and physiotherapeutic exercises can prevent such injuries in athletes.

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Author contributions

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GROUP 1: Conception of the work, Acquisition and Analysis of data.

GROUP 2: Revising the work critically for important intellectual content.

GROUP 3: Final approval of the version to be published.

GROUP 4: Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Conflicts of interest

The author declares that there are no conflicts of interest.

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